Avoiding versus seeking: the relationship of information seeking to avoidance, blunting, coping, dissonance, and related concepts*

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Question: How have theorists and empirical researchers treated the human tendency to avoid discomforting information?

Data Sources: A historical review (1890–2004) of theory literature in communication and information studies, coupled with searches of recent studies on uptake of genetic testing and on coping strategies of cancer patients, was performed.

Study Selection: The authors' review of the recent literature included searches of the MEDLINE, PsychInfo, and CINAHL databases between 1992 and summer of 2004 and selective, manual searches of earlier literature. Search strategies included the following subject headings and key words: MeSH headings: Genetic Screening/psychology, Decision Making, Neoplasms/diagnosis/genetics/psychology; CINAHL headings: Genetic Screening, Genetic Counseling, Anxiety, Decision Making, Decision Making/Patient; additional key words: avoidance, worry, monitoring, blunting, cancer. The ''Related Articles'' function in MEDLINE was used to perform additional ''citation pearl'' searching.

Main Results: The assumption that individuals actively seek information underlies much of psychological theory and communication practice, as well as most models of the information-seeking process. However, much research has also noted that sometimes people *avoid* information, if paying attention to it will cause mental discomfort or dissonance. Cancer information in general and genetic screening for cancer in particular are discussed as examples to illustrate this pattern.

Conclusion: That some patients avoid knowledge of imminent disease makes avoidance behavior an important area for social and psychological research, particularly with regard to genetic testing.

INTRODUCTION

Beyond obsessions, curiosity, and creativity, lies a host of motivations *not* to seek information.
Johnson [1]

Many early studies of communication, whether of mass or interpersonal communication, have assumed that individuals seek, or at least pay some attention to, sources of information. This assumption is deeply embedded in Western culture, at least as far back as Aristotle's statement that ''all men, by nature, desire to know'' (circa 330 BC) [2]. For this reason perhaps, the emphasis in research on communication and on information seeking has been on active acquisition of information (e.g., in Lasswell's 1948 characterization of ''surveillance of the environment'' as being one of the ''three functions of communication'' [3]).

Most discussions of information seeking also focus on the benefits of acquiring data. Many models of the information-seeking process (e.g., Ellis [4], Kuhlthau [5], and Wilson [6]) do not even consider that information seeking may *not* take place in cases in which people recognize their ignorance about a topic. As in Aristotle's time, it is assumed that people *want to know;* looking for information is a natural aspect of being human.

Yet, it has also long been noted that people may *avoid* information, if paying attention to it will cause mental discomfort or dissonance. As Maslow once put it: ''we can seek knowledge in order to reduce anxiety and we can also avoid knowing in order to reduce anxiety'' [7]. He recognized that sometimes we would rather not know that we are at high risk for a disease or disaster—a tendency familiar to communication researchers, especially those involved in information campaigns, as well as health information professionals and researchers.

The tendency to avoid, ignore, or deny information has always been somewhat of an anomaly in human behavior. How have communication theories and information-seeking models dealt with it? The idea of ''selecting'' messages naturally emphasizes the information that is *selected,* not that which is *ignored.* The authors are interested in the latter in this paper. In addressing this issue, we first examine the evolution of relevant concepts and theories and then explore how some information-seeking models incorporate the notion of avoiding information.

THE EVOLUTION FROM SELECTION TO REJECTION

The notion of avoiding information has a long history in the communication literature and a much longer one in the discipline of psychology. Perhaps as far back as James's writings on will and attention [8] and certainly in Freud's theories about psychological defenses (repression, suppression, and denial) [9], psychologists have discussed the tendency of humans to allow uncomfortable thoughts or memories to slip away. An early characterization of avoidance was that of an intentional *selection* of some stimuli rather than others. Hyman and Sheatsley's ''selective exposure'' (1947) [10] has been cited as a reason why attempts to use the mass media to change attitudes or behavior (e.g., in health promotion campaigns) sometimes fail. They characterized some people as ''chronically uninformed'' and ''hard to reach.''

On the basis of their studies, Hyman and Sheatsley observed that humans tend to seek information that is congruent with their prior knowledge, beliefs, and opinions and to avoid exposure to information that conflicts with those internal states. The hypothesized need for ''consistency'' (in thought and perhaps in emotion) also contributed to the growing research (now close to a thousand studies) on ''cognitive dissonance'' [11]. Festinger's ideas about avoiding dissonance were rooted in theories of social comparison (i.e., the tendency to evaluate oneself through comparisons with the abilities, achievements, and opinions of others), a stream of thought that continues in psychology (e.g., Trope [12] and Swann [13]). Festinger had demonstrated that under certain circumstances people prefer to seek out information consonant with their knowledge. Later experiments by Frey [14] showed that such preferences differ by whether the situation is serious and whether those involved have an opportunity to do something about it. In general, if nothing can be done to change an outcome, people have a greater willingness to deal with dissonant information.

* Based on a paper presented at the Fifty-second Annual Conference of the International Communication Association; Seoul, Korea; July 2002.

Research on ''fear appeals'' considered another possibility: purposeful *rejection* of information. In 1953, Janis and Feshback [15] found that extreme attempts to frighten people into practicing good dental hygiene, by showing them pictures of mouth cancer and deformed teeth, were not very effective. They hypothesized that such strong arousals lead an audience to ''ignore'' the threat, whereas milder portrayals are better at leading them to confront the underlying problem. Information about possible threats creates tensions in the minds of audience members, who must in turn find some way to resolve the tension. If the threat is extreme, or if any potential responses are not expected to be effective, then an attractive alternative is to ignore the threat entirely, which in turn promotes consistency. A key consideration, then, is the mechanism by which people *evaluate* messages [16].

One unsettled issue regarding avoidance is the degree to which it is triggered by the situation that a person faced, as opposed to a trait that a person possessed permanently. Rokeach [17] saw it as a tendency for people to have either an ''open'' or a ''closed'' mind. Those with an open mind were more likely to approach new information than to avoid it [18]. Seeing avoidance as a trait found new adherents in the 1980s, when psychologists interested in coping behaviors developed a related typology that addressed the emotional component of threatening information. Information-seeking styles were characterized as either ''monitoring'' or ''blunting'' [19, 20]. Individuals who are monitors scan the environment for threats; individuals who are blunters tend to avoid threatening information or distract themselves from it [21]. As many as one-third of patients choose to distract themselves when faced with threats they see as uncontrollable [21, 22].

Since the 1980s, instruments have been developed to measure coping behavior, in particular the degrees of hypothesized monitoring and blunting among patients and other subjects [23–25]. The most widely used instrument, the Monitor/Blunter Style Scale (MBSS), poses four scenarios (one directly health care related), each accompanied by eight statements that respondents check if they agree with them. Examples of blunting statements include ''I would try to sleep'' and ''I would go to the movies to take my mind off things.'' An article by Rees and Bath [26] reviews implementations of the scales and questions the reliability of the dichotomous (i.e., check/no check) version of the blunting scale. Recent investigations, (e.g., Petersson et al. [27]) have found only the ''monitoring'' scale of the MBSS to have predictive validity. Fogel [28] has illustrated a successful application of the ''Brief Cope'' scale, which includes subscales on denial and self-distraction akin to MBSS blunting items.

More recent researchers of fear appeals (e.g., Dillard [29], O'Keefe [30], Stephenson and Witte [31], and Witte [32]) have teased out distinctions in the way that people evaluate information directed at them in public campaigns. Attempts to control danger operate in parallel with the way people manage their fears and anxiety. They may protect themselves from danger by accepting suggestions for avoiding disease, or they may obviate their fear by rejecting the advice entirely as ineffective or too difficult to carry out. How people assess threatening messages is determined by several factors that have to do with the nature of the hazard itself, their perceptions of the effectiveness of responses to the threat (response efficacy), and their beliefs about their own ability to carry out effective responses (self-efficacy). High anxiety coupled with feelings of low self-efficacy are likely to invoke fear-control responses like denial, anger, guilt, or hopelessness [1].

FROM CERTAINTY TO AMBIGUITY

The assumption of seeking knowledge is embedded in theories of *uncertainty reduction,* as several communication scholars [33–36] have pointed out. Their basic idea is that humans have a drive to reduce uncertainty to make the world more predictable [37, 38]. Learning facts about an issue of relevance increases certainty and thus reduces the tension created by the hypothesized drive.

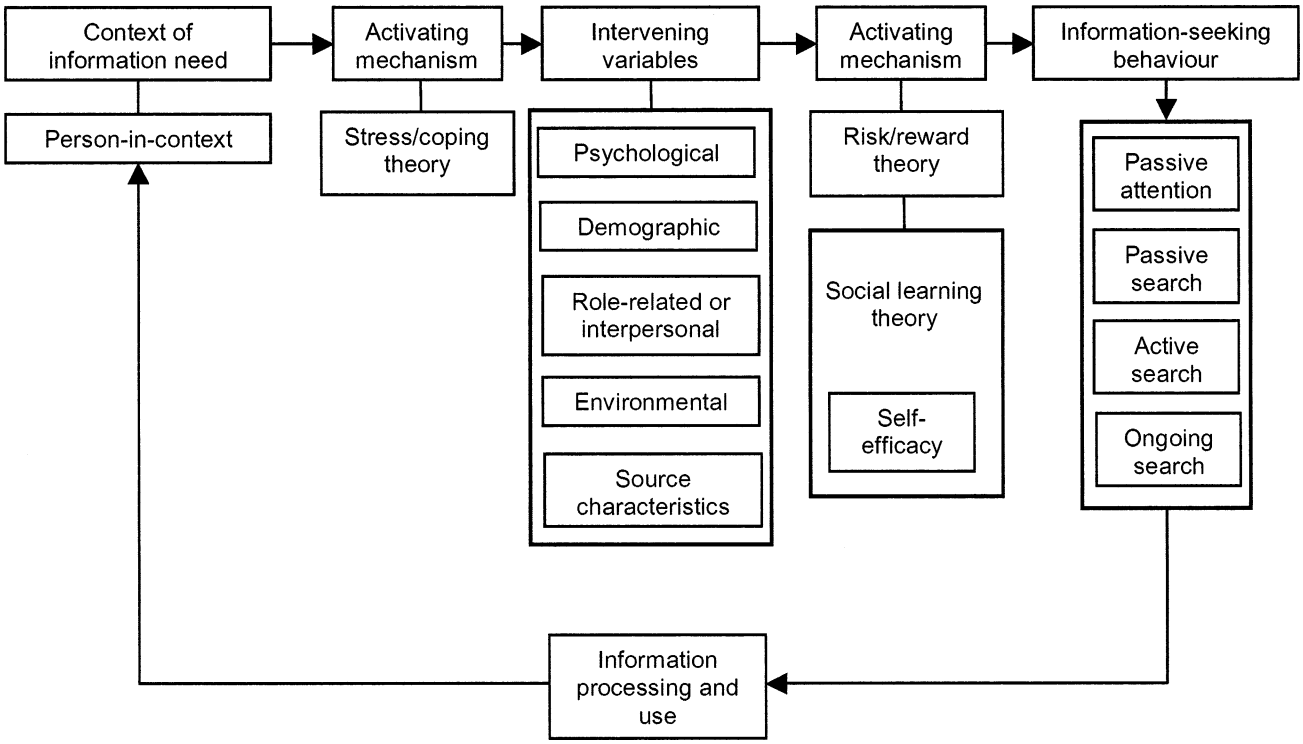
Much of the current information-seeking literature is still based on the centrality of uncertainty reduction. Kuhlthau [5], for example, emphasizes that ''uncertainty due to a lack of understanding . . . initiates the process of information seeking.'' Some, also like Kuhlthau, acknowledge that information does not *always* reduce uncertainty.

In discussions of information seeking, uncertainty is typically tied to feelings of anxiety. So acquiring information is to be desired not merely for its instrumental value (i.e., ''doing something'' about a potential threat), but also for its emotional value (e.g., feeling assured that the threat is not imminent). Reducing uncertainty helps us not only maximize future outcomes [21, 22], but also guards against emotional stress [39]. Seeking information may serve both of these functions simultaneously [20, 40].

But as Sorrentino [18] points out, much of the literature on uncertainty reduction emphasizes either the *benefits* (particularly long-term) of having new information (e.g., for assessing one's self or planning future behavior) or the costs of information (e.g., being forced to acknowledge threats or personal failings). Few theorists consider both costs and benefits in their examples.

Problematic Integration Theory [41] and Uncertainty Management Theory [42, 43] question the assumption that humans are always reducing uncertainty. Uncertainty Management Theory, in particular, offers a more sophisticated way of explaining avoidance, because it highlights how people sometimes deliberately *increase* uncertainty. Uncertainty Management Theory holds that uncertainty is experienced ''not simply as an uncomfortable tension demanding reduction'' [34], but also as feelings and cognitions that can be managed in other ways as well. These other ways may include ''seeking instead ambiguity and even confusion'' [34], because ''individuals may use uncertainty as a tool . . .

Figure 1
Wilson's model of ''information behaviour''



sometimes this cognitive state will be cultivated, rather than eradicated'' [34].

To foreshadow our discussion below, two examples of the deliberate increasing of uncertainty are found in situations where a physician must deliver a threatening diagnosis to a patient. One party to the dyad, the physician, might choose to provide an uncertainty-increasing message in the belief that the patient is certain of bad news [43]. The patient, in turn, might avoid information to maintain uncertainty or even seek out uncertainty-increasing information [35]. In both cases, increased uncertainty might actually provide some increase in comfort for the patient, even though in a way that might compromise treatment.

Yet simply rejecting an opportunity to decrease uncertainty is probably more common than intentionally increasing it. For example, Mckenzie [44] discusses the case of pregnant women who would rather not know what the gender of their child is and/or whether the child possibly has (or runs a high risk for) a disease. Their refusal to ask for or accept such information from their physician often stems from a conscious decision not to place themselves in a position in which they may need to make difficult choices (e.g., abortion) or, in the case of determining gender, simply a wish not to spoil a ''surprise'' at birth.

Before turning to a particular case of information avoidance to illustrate our different emphasis in information-seeking research, we will examine two models that deal explicitly with how individuals may *not* seek information and when they may actively *avoid* learning new things. How do discussions of information seeking portray avoidance of information?

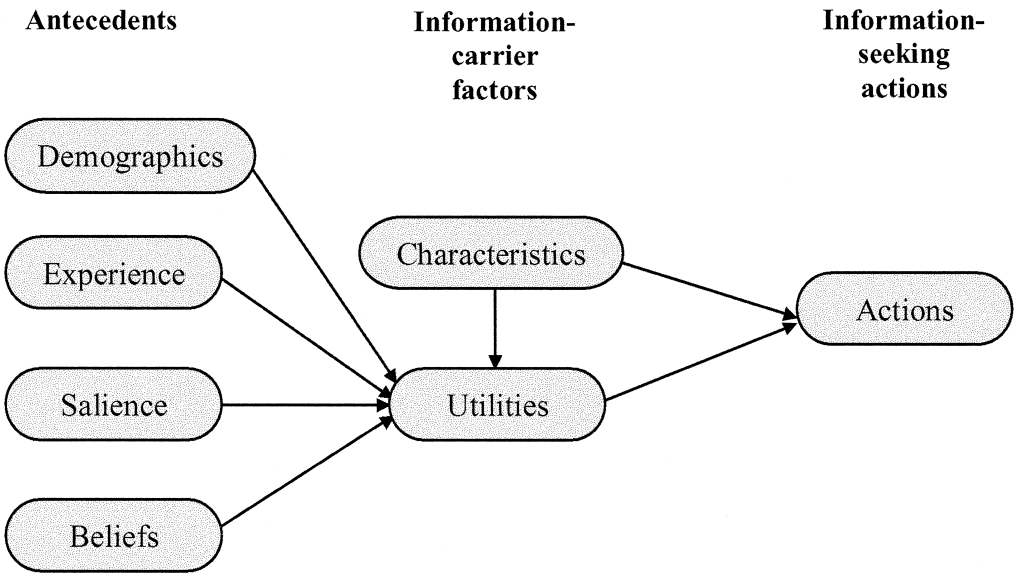
RESULTS

How does the information-seeking literature portray avoidance?

The information-seeking literature—most of it concerned with practical issues regarding the stages, mechanisms, processes, channels, sources, and sometimes barriers that mediate information seeking—cites relatively few behavioral theories [45, 46]. And given that virtually all of this literature assumes that people choose to seek information, the idea of avoiding information is rarely discussed. The notion of avoidance more commonly appears in discussions of research models [1, 4, 6, 47]. Among these, only Johnson's and Wilson's information-seeking models explicitly discuss mechanisms whereby people may avoid information. In contrast, the other models tend to limit themselves to the *selection* of certain information in preference to other information.

A model of ''information behaviour'' by Wilson [6] is the latest in a series of diagrams dating back to 1981. Wilson identifies the factors in his model from literature in other fields, including ''decision making, psychology, innovation, and health communication and consumer research'' [6]. Wilson's complex model (Figure 1) invokes explicit theories at points to explain why some needs prompt information seeking more so than others (stress/coping theory, from psychology),

Figure 2
Johnson's Comprehensive Model of Information Seeking (CMIS)



why some sources of information are used more than others (risk/reward theory, from consumer research), and why people may, or may not, pursue a goal successfully, based on their perceptions of their own efficacy (social learning theory, from psychology).

Wilson's ''activating mechanisms'' can be thought of as motivators: What motivates a person to search for information, how, and to what extent? These motivators are affected by intervening variables of five types: psychological predispositions (e.g., tendency to be curious or averse to risk), demographic background (e.g., age or education), factors related to one's social role (e.g., role as a manager or a mother), environmental variables (e.g., available resources), and characteristics of the sources (e.g., accessibility and credibility).

An important aspect of Wilson's model is that it explicitly recognizes avoidance behaviors in its references to psychological literature on coping and stress. These behaviors are invoked immediately after a need arises. The importance of this model is its recognition that the typical ''intervening variables'' (psychological, demographic, role-related, environmental, or source characteristics) may *not come into play,* if the nature of the need or the information needed to address it is too threatening or stressful. Although Wilson does not discuss it in detail, a later ''activating mechanism'' also contains a component that is relevant to avoidance: self-efficacy as represented in Bandura's [48] social learning theory (more recently called the ''Theory of Planned Behavior''). Similar to Johnson's model, perceptions of self-efficacy are also related to avoidance behaviors.

Johnson's model, ''the Comprehensive Model of Information Seeking'' (CMIS), has been cited repeatedly in reviews of the information-behavior literature (e.g., Case [49], Rice et al. [50], and Wilson [6]) and is particularly helpful in understanding health-related information seeking—or avoidance. It contains seven factors under three headings. It is pictured as a quasi-causal process that flows from left to right (Figure 2), beginning with four ''antecedent'' factors. The significance of the components of Johnson's model's is not obvious in its depiction but rather is explained in depth in his writings.

In Johnson's CMIS, the antecedent factors motivate a person to seek information. The first two are grouped together under the label of ''background factors,'' for example, ''demographics'' (i.e., one's age, gender, and ethnicity, along with socioeconomic variables like education, occupation, wealth, etc.). A background factor far more difficult to characterize is one's ''direct experience'' in relation to the domain of interest. The concept of experience brings up issues of knowledge representation and memory too complex to consider here; suffice it to say that typically one starts out knowing *something*—perhaps little or a great deal—about the phenomenon of interest, as well as about the ways one can find out information about it. Thus, a key concept under the heading of experience is the ''social network'' of the individual with an information need: ''Who do I know who might know the answer to my questions or know how to find out?'' For example, Johnson focuses on information about cancer, and thus a prime determinant of knowledge is: ''Who do I know who has had cancer?'' Because a majority of families are touched by the disease in some way and because the occurrence of cancer in one member of the family often motivates other family members to seek information about treatment, cancer information has high levels of social significance.

Just as the first and second factors are grouped together, the third and fourth fall under the heading of

''personal relevance.'' Most of the subtopics of this review fall under the personal relevance category, including fear, denial, avoidance, and ignoring of information. Personal relevance factors include ''beliefs'' about the topic invoked and the ''salience'' of information about it. Both depend on a person's degree of knowledge—or, conversely, their state of ignorance—about the topic, and both indirectly invoke the issue of avoiding information.

Johnson says that ''ignoring . . . happens when an individual consciously knows that a problem exists, but chooses not to confront it'' [1]. Mere ignorance, by itself, is not typically a motivator for information seeking. People are only motivated to seek information when they both know that they are ignorant *and* the missing information becomes salient. As we explore below, sometimes people prefer to be ignorant, particularly in matters of health. A confounding problem is that people sometimes believe information that turns out to be flawed. These kinds of *false truths* can suppress or distort information seeking.

The concept of salience implies that information is not only perceived to be relevant to a need, but that it is also applicable to a person's concerns. Thus, salience is the key motivator in deciding to look for information [1]. Beliefs are important in information seeking because they constrain the individual's thinking and level of motivation regarding information seeking: the beliefs that a person has about the world and answers to questions like: ''Is there a problem?'' ''Is there a solution?'' and ''Can I change my situation?'' Beliefs are not only about facts, but also about our relation to the current situation, in other words, people's degree of control over events, their self-efficacy. If people do not believe that knowing more about a topic will allow them to effect a change, then they are not likely to seek information. Conversely, feeling that they can solve a problem will motivate them to find the means to do so—which includes information.

The second column of Johnson's model, ''information-carrier factors,'' encompasses the factors that have preoccupied many older studies of information seeking: the ''characteristics'' and ''utility'' of the information channels seekers select and use. As Johnson highlights [1], what information seekers are concerned about is the content of the information, not the channel through which it arrives. However, people have a strong preference for information that comes directly from other people. Use of other channels tends to be predicted by the *social presence* they offer, that is, how much they are perceived as being like a face-to-face conversation with another person or, as Johnson puts it, ''the extent to which they reveal the presence of other human interactants and can capture the human, feeling side of relationships'' [1].

Regarding the utility of channels, Johnson says that they are selected on the basis of their match with the seeker's needs and expectations regarding likely satisfactions to be obtained. Potential utility is equated with ''interest, usefulness and importance for achieving one's goals'' [1]. Johnson cites studies suggesting that ease of accessibility often wins out over authoritativeness (the latter implying better utility).

The final components of Johnson's model are ''information-seeking actions.'' Searches for information involve conscious choices among channels and sources but also imply processes, feelings, and a whole host of other behavioral and cognitive elements. Johnson notes that among the more general difficulties inherent in studying the actions people take when they look for information is a distinction between *active* and *passive* acquisition. It is difficult, if not impossible, to know whether someone has sought and found information in their environment (active acquisition) or, instead, been exposed to it in a public service announcement while watching television for other reasons (passive acquisition).

Models for studying avoidance of threatening health information

These new models of information seeking by Wilson and Johnson have explicitly addressed the issue of information avoidance, each in a different way. Both the Wilson and Johnson models address relevant aspects of empirical findings on health-related information seeking (below). This is particularly true of the Johnson model, because it has been developed with cancer information seeking in mind. Both models allow for a decision (conscious or unconscious) to avoid information, and both incorporate the concepts of anxiety and self-efficacy as motivating or inhibiting factors.

Wilson's model depicts anxiety as the initial ''activating mechanism'' that determines whether one decides to pursue information, in which case, other ''intervening'' variables may come into play. In Johnson's model, emotions like fear and actions like denial or ''ignoring'' information are found among the ''personal relevance factors.'' In both models, self-efficacy plays a key role in the decision to seek information. In Wilson's model, the self-efficacy concept is explicitly invoked, while in Johnson's model, it is subsumed under individual judgments of the salience of information.

We will now consider how information avoidance occurs in one area of human behavior, learning about cancer, and the implications for research on that topic.

An example: avoiding information about cancer

A focus on the avoidance of information contrasts with the emphasis of most information-campaign research. Much of the (especially early) literature on health information overemphasizes human rationality and efficiency in information seeking (e.g., see the reviews in Rice and Atkin [51, 52]). Yet as Rimal and Real [53] indicate, the ''self-protective'' aspects of information seeking tend to be neglected in the health literature. Public health professionals recognize that encouraging safe practices by emphasizing potentially harmful effects may be ''tuned out'' by readers, viewers, and listeners who simply ''would rather not know.'' This issue is increasingly critical, because the health consum-

erism movement has placed responsibility for decision making in the hands of individuals. That makes examining the role of information seeking in regard to health matters even more important to reduce morbidity and mortality.

Perhaps no health problem results in as much anxiety as facing the threat of cancer. Cancer is especially difficult to cope with because it is represented by a variety of diseases and stages. It is also a threat of almost mythic dimensions: virtually everyone knows someone who has had and perhaps has even died of cancer. The mass media are filled with reports about cancer and its victims.

Avoiding information is closely linked to feelings of anxiety and fear, as well as to other cognitive and emotional variables like perceptions of treatment efficacy, self-efficacy, and locus of control (the degree to which one's fate is governed externally versus controlled by one's self). While information is often thought of as *reducing* anxiety, such is not always the case. A recent study of the effects of a consumer health information service [54] found that 52% of the people who received information said that it reduced their anxiety about a health concern; yet for another 10%, having the medical information *increased* their anxiety. While 10% is a modest percentage, it at least indicates that receiving more information does not have the same positive results for everyone.

Raised anxiety is tied to perceptions of *efficacy* in several ways. Anxiety is related to individual beliefs in the efficacy of medical procedures associated with cancer [55, 56]. That portion of the population who (rightly or wrongly) believe that a diagnosis of cancer means certain death and uncontrollable pain [57] tend to feel powerless in regard to cancer [58, 59]. While many treatments are becoming steadily more efficacious, cancers (e.g., of the lung) remain for which effective treatments are limited. Feelings of powerlessness, in turn, lead to *less* information seeking, because many feel it does not make much sense to learn more about things over which they have no control [60].

A related variable is locus of control, as distinct from self-efficacy. Self-efficacy depends more on the context of a situation, while locus of control is more a personality trait that crosses situations [55]. According to Bandura [48, 61], individuals' sense of locus of control affects their feelings of self-efficacy. If one feels that outcomes in life are determined by factors external to the self, then searching for information is relatively futile. In that situation, avoiding information may become a more attractive response to threat.

Lack of information seeking when faced with disease appears irrational, because this is when information could be most beneficial and result in reduced morbidity and mortality [1, 62]. Yet studies indicate that people are less likely to look for information as their proximity to cancer increases. Patients with cancer may be less likely to look for information, even though their situation calls for more information [63]. Tendencies toward fatalism and avoidance can short circuit any information seeking at all.

Cancer genetics as an area for studying information avoidance

Genetic research offers many new avenues to address issues of predisposition for cancer and to identify early onset of the disease, so that treatment can be more effective and less invasive. Genetic screening is thought to have the potential for transforming how cancer may be treated as well as prevented [64]. However, genetic counseling and testing is necessary to fulfill this promise to increase prevention and recovery from cancer through an early warning system.

But genetic information is inherently complex and individualistic, and ongoing research is constantly adding to the volume and variety of available information. This complexity means that an individual must be knowledgeable about the nature of genetics before they can even use such data—whether general or individualized—to make decisions about their own health situation. Thus, informing the public about cancer-related genetics information offers special challenges because of the complexity of the health issues involved and because of the ever-evolving body of scientific knowledge [65].

A significant portion of the US public is interested in genetics and genetic testing and recognizes that these advances can affect their health care decisions. In a recent national survey [66], more than a third of adults said they had followed the developments leading to the mapping of the human genome. Nearly two-thirds of the respondents said that they were likely to take a genetic test if it could identify whether or not they were at risk of contracting a disease.

Other studies in the scientific literature support these general findings. For instance, a general population survey found high levels of interest in genetic testing (82%) [67]. Regarding cancer genetics, Andrykowski et al. [68] again found high interest in predictive genetic testing for cancer in general (87%), and breast cancer in particular (93%). Our survey research among 886 adult residents of a southeastern state [69] found that 38% worried about inherited types of cancer ''often'' or ''sometimes'' and that 59% said they would definitely or probably have a screening test if it were available to them.

While these results suggest significant demand for genetic testing and related information, they may overestimate the demand for such information. The medical literature shows cases of increased anxiety [70, 71], depression [72, 73], and other psychosocial responses to genetic testing. Given the possibility for such negative scenarios, it is understandable why people may choose *not* to seek genetic testing and may simply be content with their current situations [70]. Alpert [74] points out that the ''right not to know'' is a compelling issue for genetic testing when diseases (such as Huntington's) are involved for which neither cures nor preventative measures exist. In such cases, it is not only a matter of who is tested but with whom they share the results. Some family members may not want to know the results of their relative's test.

Repeated studies of cancer patients find a core, albeit a minority, who do not want information under any circumstances [75, 76]. Studies have found that anxiety levels are higher among those who decline to be tested than those who get either a positive or negative result [77]. Given the advances in genetic research about cancer, it is important to understand the mechanism of information avoidance to best reach people who may benefit from genetic counseling or testing.

CONCLUSION

We suggest that the avoidance of information from genetic testing for cancer is a prime area that communication and information science research can focus on. We view the concept of information avoidance as related to, but not synonymous with, earlier concepts invoked in investigations of selective exposure, ignorance, cognitive consistency, fear appeals, uncertainty reduction, uncertainty management, coping, and monitoring and blunting behaviors.

We have advanced the case that over the years researchers have, in different ways and with different terminology, spotlighted the human tendency to avoid, ignore, and/or deny information, particularly in the context of health care. We also suggest that such tendencies have been relatively underemphasized in preference to a focus on active seeking and monitoring of information.

The issue of whether individuals will choose to seek—or rather ignore—genetic testing is an ideal vehicle for exploring information avoidance and related behaviors. Genetic testing offers a choice between opting to know one's risks or deliberately ignoring them. This makes it a fertile bed for developing theory. We can, for example, explore the varying circumstances that may lead to avoidance: by type and severity of potential disease, by estimated likelihood of contracting a condition, and by the usual demographic factors.

We anticipate looking at these factors empirically through surveys of medical patients who might benefit from genetic testing and counseling and surveys of large samples of the general public. These investigations will be designed to examine factors that may affect or impede genetics information seeking, ranging from the relationship of various background or socioeconomic factors to the complex (and at times paradoxical) behavior of those most directly confronted with illness. Ultimately, our goal is to develop interventions (as outlined in Johnson et al. [78]) that are tailored to individuals' information-seeking style to help them become more self-sufficient, lifelong information seekers.

Obviously, genetic testing also has tremendous practical implications. Information seeking is a key moderator between perceived threats of disease, including genetic predisposition, and the likelihood of taking action, including genetic counseling or testing (see Johnson et al. [78]). The scope and nature of the information on which to base medical judgments, the repertoire of alternative courses of action known to the searcher, and ultimately the action taken are all affected by individuals' information-seeking behaviors. Because the health consumerism movement has placed responsibility for decision making in the hands of individuals, examining the role of information seeking in regard to genetic testing is even more important. The dearth of cancer genetics counselors only exacerbates this problem, because the availability of their advice directly affects the efficacy levels of patients. Similarly, physicians and other primary care providers can influence patient decisions related to genetics but may lack the necessary skills for communicating risk and other critical information.

Patients could clearly benefit from genetic testing information, because early detection of cancer leads to earlier treatments and better treatment outcomes. Knowledge about testing, hopefully, will increase the cancer cure rate, one of the ultimate goals of the National Cancer Institute [64, 79]. In keeping with that goal, a better understanding of human tendencies to avoid information in general, and genetic information in particular, needs to be developed.

REFERENCES

1. JOHNSON JD. Cancer-related information seeking. Cresskill, NJ: Hampton Press, 1997:70–100.
2. ARISTOTLE. Metaphysics. Apostle HG, translator. Grinnell, IA: Peripatetic Press, 1979.
3. LASSWELL H. The structure and function of communication in society. In: Bryson L, ed. The communication of ideas: a series of addresses. New York, NY: Harper, 1948:37–51.
4. ELLIS D. A behavioural approach to information retrieval design. J Doc 1989 Sep;45(3):171–212.
5. KUHLTHAU CC. A principle of uncertainty for information seeking. J Doc 1993 Dec;49(4):339–55.
6. WILSON TD. Models in information behaviour research. J Doc 1999 Jun;55(3):249–70.
7. MASLOW AH. The need to know and the fear of knowing. J Gen Psychol 1963 Jan;68:111–25.
8. JAMES W. The principles of psychology. New York, NY: Henry Holt, 1890.
9. FREUD S. The ego and the id. New York, NY: Norton, 1923/1962.
10. HYMAN HH, SHEATSLEY PB. Some reasons why information campaigns fail. Public Opin Q 1947 Autumn;11(3): 412–23.
11. FESTINGER L. A theory of cognitive dissonance. Stanford, CA: Stanford University Press, 1957.
12. TROPE Y. Uncertainty-reducing properities of achievement tasks. J Pers Soc Psychol 1979 Sep;37:1505–18.
13. SWANN WB. To be adored or to be known? the interplay of self-enhancement and self-verification. In: Higgins ET, Sorrentino RM, eds. Handbook of motivation and cognition: foundations of social behavior. v.2. New York, NY: Guilford Press, 1990:408–48.
14. FREY D. Different levels of cognitive dissonance, information seeking, and information avoidance. J Pers Soc Psychol 1982 Dec;43:1175–83.
15. JANIS IL, FESHBACK S. Effects of fear-arousing communications. J Abnorm Soc Psychol 1953;48:78–92.
16. SEARS D, FREEDMAN J. Selective exposure to information: a critical review. Public Opin Q 1967 Winter;31(2):194–213.

17. ROKEACH M. The open and closed mind. New York, NY: Basic Books, 1960.
18. SORRENTINO RM. The uncertain mind: individual differences in facing the unknown. Philadelphia, PA: Taylor & Francis, 2000.
19. FOLKMAN S, LAZARUS RS. An analysis of coping in a middle-aged community sample. J Health Soc Behav 1980 Sep;21(3):219–39.
20. LAZARUS RS, FOLKMAN S. Coping and adaptation. In: Gentry WD, ed. The handbook of behavioral medicine. New York, NY: Guilford, 1984.
21. MILLER SM. Coping with impending stress: psychophysiological and cognitive correlates of choice. Psychophysiology 1979 Nov;16:572–81.
22. MILLER SM. Controllability and human stress: method evidence and theory. Behav Res Ther 1979;17(4):287–304.
23. MILLER SM. Monitoring and blunting: validation of a questionnaire to assess styles of information seeking under threat. J Pers Soc Psychol 1987 Feb;52(2):345–53.
24. MILLER SM, RODOLETZ M, SCHROEDER CM, MANGAN CE, SEDLACEK TV. Applications of the Monitoring Process Model to coping with severe long-term medical threats. Health Psychol 1996 May;15(3):216–25.
25. VAN ZUUREN FJ, WOLFS HM. Styles of information seeking under threat: personal and situational aspects of monitoring and blunting. Pers Individ Dif 1991;12(2):141–9.
26. REES CE, BATH PA. The psychometric properties of the Miller Behavioral Style Scale with adult daughters of women with early breast cancer: a literature review and empirical study. J Adv Nurs 2000 Aug;32(2):366–74.
27. PETERSSON LM, NORDIN K, GLIMELIUS B, BREKKAN E, SJODÉN PO, BERGLUND G. Differential effects of cancer rehabilitation depending on diagnosis and patients' cognitive coping style. Psychosom Med 2002 Nov/Dec;64(6):971–80.
28. FOGEL J. Internet breast health information use and coping among women with breast cancer. Cyberpsychol Behav 2004 Feb;7(1):59–63.
29. DILLARD JP. Rethinking the study of fear appeals. Commun Theory 1994 Nov;4(4):295–323.
30. O'KEEFE DJ. Persuasion theory and research. Newbury Park, CA: Sage Publications, 1990.
31. STEPHENSON MT, WITTE K. Creating fear in a risky world: generating effective health risk messages. In: Rice RE, Atkin CK, eds. Public communication campaigns. 3rd ed. Thousand Oaks, CA: Sage Publications, 2001:88–102.
32. WITTE K. Putting the fear back into fear appeals: the extended parallel process model. Commun Monogr 1992 Dec; 59(4):329–49.
33. AFFIFI WA, WEINER JL. Toward a theory of motivated information management. Commun Theory 2004 May;14(2): 167–90.
34. BRADAC JJ. Theory comparison: uncertainty reduction, problematic integration, uncertainty management, and other curious constructs. J Commun 2001 Sep;51(3):456–76.
35. BRASHERS DE, GOLDSMITH DJ, HSIEH E. Information seeking and avoiding in health contexts. Hum Commun Res 2002 Apr;28(2):258–72.
36. RITCHIE LD. Communication concepts 2: information. Newbury Park, CA: Sage Publications, 1991.
37. BERGER CR, CALABRESE R. Some explorations in initial interaction and beyond: toward a developmental theory of interpersonal communication. Hum Commun Res 1975 Winter;1(2):99–112.
38. BERLYNE DE. Conflict, arousal, and curiosity. New York, NY: McGraw-Hill, 1960.
39. SHILOH S, BEN-SINAI R, KEINAN G. Effects of controllability, predictability, and information-seeking style on interest in predictive genetic testing. Pers Soc Psychol Bull 1999 Oct;25(10):1187–95.
40. FOLKMAN, S. Personal control and stress and coping processes: a theoretical analysis. J Pers Soc Psychol 1984 Apr; 46(4):839–52.
41. BABROW AS. Communication and problematic integration: understanding diverging probability and value, ambiguity, ambivalence, and impossibility. Commun Theory 1992 May;2(2):95–130.
42. BABROW AS, KASCH C, FORD LA. The many meanings of uncertainty in illness: toward a systematic accounting. Health Commun 1998 Sep;10(1):1–23.
43. FORD LA, BABROW AS, STOHL C. Social support and the management of uncertainty: an application of problematic integration theory. Commun Monogr 1996 Sep;63(3):189–207.
44. MCKENZIE PJ. Justifying cognitive authority decisions: discursive strategies of information seekers. Libr Q 2003 Jul; 73(3):261–88.
45. CASE DO. Information behavior. In: Cronin B, ed. Medford, NJ: Information Today, Annu Rev Inf Sci Technol 2005; 40:forthcoming.
46. PETTIGREW KE, FIDEL R, BRUCE H. Conceptual frameworks in information behavior. In: Williams ME, ed. Medford, NJ: Information Today. Annu Rev Inf Sci Technol 2001; 3543–78.
47. BALDWIN NS, RICE RE. Information-seeking behavior and securities analysts: individual and institutional influences, information sources and channels, and outcomes. J Am Soc Inf Sci 1997 Aug;48(8):674–93.
48. BANDURA A. Social learning theory. Englewood Cliffs, NJ: Prentice Hall, 1977.
49. CASE DO. Looking for information: a survey of research on information seeking, needs, and behavior. New York, NY: Academic Press, 2002.
50. RICE RE, MCCREADIE M, CHANG SL. Accessing and browsing information and communication. Cambridge, MA: MIT Press, 2001.
51. RICE RE, ATKIN CK. Public communication campaigns. Newbury Park, CA: Sage, 1989.
52. RICE RE, ATKIN CK. Public communication campaigns. 3rd ed. Newbury Park, CA: Sage Publications, 2001.
53. RIMAL RN, REAL K. Perceived risk and efficacy beliefs as motivators of change: use of the Risk Perception Attitude (RPA) framework to understand health behaviors. Hum Commun Res 2003 Jul;29(3):370–99.
54. PIFALO V, HOLLANDER S, HENDERSON CL, DESALVO P, GILL G. The impact of consumer health information provided by libraries: the Delaware experience. Bul Med Libr Assoc 1997 Jan;85(1):16–22.
55. ROSENSTOCK IM, STRECHER VJ, BECKER MH. Social learning theory and the health belief model. Health Educ Q 1988 Summer;15(2):175–83.
56. VISWANATH K, KAHN E, FINNEGAN JR, HERTOG J, POTTER JD. Motivation and the knowledge gap: effects of a campaign to reduce diet-related cancer risk. Commun Res 1993 Aug; 20(4):546–63.
57. LICHTER I. Communication in cancer care. New York, NY: Churchill-Livingstone, 1987.
58. BECKER MH, ROSENSTOCK IH. Health promotion, disease prevention, and program retention. In: Freeman HE, Levine S, eds. Handbook of medical sociology. Englewood Cliffs, NJ: Prentice-Hall, 1989:284–305.
59. SEYDEL E, TAAL E, WIEGMAN O. Risk-appraisal, outcome, and self-efficacy expectations: cognitive factors in preventive behavior related to cancer. Psychol Health 1990 Apr;4(2):99–109.
60. KATZ E. On reopening the question of selectivity in ex-

posure to mass communications. In: Abelson RP, ed. Theories of cognitive consistency. New York, NY: Rand McNally, 1968:788–96.
61. BANDURA A. Social foundations of thought and action. Englewood Cliffs, NJ: Prentice-Hall, 1986.
62. CASSILETH BR, VOLCKMAR BA, GOODMAN RL. The effect of experience on radiation therapy patients desire for information. J Radiat Oncol Biol Phys 1980 Apr;6(4):493–6.
63. DEGNER LF, SLOAN JA. Decision making during serious illness: what role do patients really want to play? J Clin Epidemiol 1992 Sep;45(9):941–50.
64. KLAUSNER R. The nation's investment in cancer research. Bethesda, MD: National Cancer Institute, 1996.
65. THOMSEN CA, MAAT JT. Evaluating the cancer information service: a model for health communications. part 1. J Health Commun 1998;3:1–14.
66. AVINS M. Genome map success: much yet to discover. Los Angeles Times 2000 Aug;7:E-1,3.
67. ANDRYKOWSKI MA, MUNN RK, STUDTS JL. Interest in learning of personal genetic risk for cancer: a general population survey. Prev Med 1996 Sep–Oct;25(5):527–36.
68. ANDRYKOWSKI MA, LIGHTNER R, STUDTS JL, MUNN RK. Hereditary cancer risk notification and testing: how interested is the general population? J Clin Oncol 1997 May;15(5): 2139–48.
69. CASE D, JOHNSON JD, ANDREWS JE, ALLARD SL, KELLY KM. From two-step flow to the Internet: the changing array of sources for genetics information seeking. J Am Soc Inf Sci Tech 2004 Jul;55(8):660–9.
70. CHALIKI H, LOADER S, LEVENKRON JC, LOGAN-YOUNG W, HALL WJ, ROWLEY PT. Women's receptivity to testing for a genetic susceptibility to breast cancer. Am J Public Health 1995 Aug;85(8):1133–5.
71. LERMAN C, SEAY J, BALSHEM A, AUDRAIN J. Interest in genetic testing among first-degree relatives of breast cancer patients. Am J Med Genet 1995 Jul;57(3):385–92.
72. LERMAN C, HUGHES C, TROCK BJ, MYERS RE, MAIN D, BONNEY A, ABBASZADEGAN MR, HARTY AE, FRANKLIN BA, LYNCH JF, LYNCH HT. Genetic testing in families with hereditary nonpolyposis colon cancer. JAMA 1999 May;281(17): 1618–22.
73. SMITH KR, CROYLE RT. Attitudes toward genetic testing for colon cancer risk. Am J Public Health 1995 Oct;85(10): 1435–38.
74. ALPERT SA. Protecting medical privacy: challenges in the age of genetic information. J Soc Issues 2003 Jul;59(2):301–22.
75. HINDS C, STREATER A, MOOD D. Functions and preferred methods of receiving information related to radiotherapy: perceptions of patients with cancer. Cancer Nurs 1995 Oct; 18(5):374–84.
76. STRUEWING JP, LERMAN C, KASE RG, GIAMBARRESI TR, TUCKER MA. Anticipated uptake and impact of genetic testing in hereditary breast and ovarian cancer families. Cancer Epidemiol Biomarkers Prev 1995 Mar;4(2):169–73.
77. KASH KM, ORTEGA-VERDEJO K, DABNEY MK, HOLLAND JC, MILLER DG, OSBORNE MP. Psychosocial aspects of cancer genetics: women at high risk for breast and ovarian cancer. Semin Surg Oncol 2000 Jun;18(4):333–8.
78. JOHNSON JD, ANDREWS JE, ALLARD S. A model for understanding and affecting genetic information seeking. Libr Inf Sci Res 2001 Winter;23(4):335–49.
79. US DEPARTMENT OF HEALTH AND HUMAN SERVICES. Healthy people 2010. 2nd ed. v.1. Washington, DC: Government Printing Office, 2000.

Received April 2004; accepted October 2004